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DIGITAL DATA DUBBING CAPABILITY

by William B. Brierly, Jr.
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Digital data are the key ingredients to the operation of any computer system. It is analogous to the fuel which powers a car. Computers, like cars, can be designed and built to perform amazing feats – but if you can't feed the monster, it will die!

The U.S. Army currently has over 70 systems or programs planned, under development or fielded that require digital topographic/terrain data (DTD) for their operation. Often these systems cannot share data already being produced and in existence, i.e. they have their own unique data specification. The Defense Mapping Agency (DMA) has been the principal producer of DTD for the armed services but has stated repeatedly in recent years that they do not have enough resources to support a proliferation of systems each with its own unique data specification. DMA therefore has opted to issue a standard products list of 28 products (at this time) – 16 of which are digital data MC&G products describing terrain and feature information. DMA now expects users to "fall in step" and design systems that can use standard products, or make the necessary adjustments themselves. The Terrain Analysis Center (TAC) has been tasked by HQDA to support selected Army systems requiring digital data generation, transformation, and dubbing that is beyond the capability of DMA to support. Data generation meaning the production of new information; transformation meaning the changing of data formats so that two different systems can understand the same data; and dubbing meaning an exact transfer of the data from one medium to another, for example, hard disk to floppy diskette, magnetic tape to magnetic tape, etc.

TAC's new undertaking got its start in the summer of 1986 when new topographic software was released by the United States Military Academy's (USMA) Department of Geography and Computer Science for the MICROFIX-T Topographic Workstation, a fielded Army near-term intelligence system. Within this software were the Digital Terrain Mapping (DTM) routines, allowing workstations to manipulate and display digital terrain elevation data (DTED), produced by the Defense Mapping Agency (DMA), into products such as tinted elevation maps, tinted slope maps, oblique views of terrain, line-of-sight, weapons/sensor masking plots, etc. The problem, however, was that DMA only supplied DTED in one format on 9-track magnetic tape. MICROFIX-T required both a different data format and medium (videocassette tape). In June 1986, the Office of the Assistant Chief of Engineers hosted a meeting on the fielding of this MICROFIX 2.1 software. The participants concluded that the U.S. Army Engineer Topographic Laboratories (USAETL) would be the preferred location for a MICROFIX-T DTED Dubbing Workstation. USMA designed the workstation and wrote special software to make this transformation and dubbing operation possible. Production of DTED videocassette tapes by USAETL's TAC began in January 1987, following receipt of hardware from the U.S. Army Forces Command (MICROFIX Program Manager then) and hookup of the hardware plus the installation of the software by USMA. Over 220 one-degree cells of DTED have been processed and

distributed to 19 different units world-wide thus far. Considering that it takes up to three hours to complete the entire downloading, transformation, and dubbing operation for just one cell, this represents a great deal of accomplishment. The Summer 1987 issue of Tech-Tran, USAETL's publication in support of technology transfer, features the MICROFIX-T DTED Dubbing Workstation. Extra copies of this issue are available at this conference or from USAETL's Liaison Office.

As TAC began its entry into digital data support for MICROFIX, the prospect for an expanding future role was foreseen. In keeping with the notion that TAC may have an expanding role in this kind of support to Army, the name Army Digital Data Support Facility (ADDSFAC) was coined to include the MICROFIX-T DTED Dubbing Workstation as well as any future support operations that may be initiated at TAC. At least two new types of ADDSFAC support seem likely to begin in the coming year:

   (1) DTED for the IBM PC AT and compatibles - USMA is writing software that will allow DTED to be downloaded from 9-track tape to 5 1/4" floppy diskettes. The diskettes can then be used in conjunction with software being written by USMA to process the DTED. Completion of dubbing software is expected by the end of October 1987. Processing software will follow at a later date.

   (2) Digital Terrain Data (DTD) - TAC will be producing digital Tactical Terrain Analysis Data Bases (TTADB) in conjunction with its analysis efforts in the Army Training Battle Simulation System (ARTBASS) program. In addition, terrain data tapes produced for this same program by DMA (before the ARTBASS program was assumed by TAC) will be obtained by TAC. These data are roughly equivalent to a 1:50,000-scale topographic map or terrain analysis product (in data content, accuracy and resolution).

Other types of support from ADDSFAC in the future could possibly include:

   (1) Worldwide Water Resources Data - As TAC establishes its Water Resources Data Base (WRDB), standard product tapes may be generated and/or dubbed.

   (2) Other systems support - such as DTED for FIREFINDER, Army's counter-artillery and counter-mortar radar system

   (3) Special Terrain Data (STD) - Roughly equivalent to a 1:12,500-scale topographic map or terrain analysis product (in data content, accuracy and resolution)

TAC is excited about its new support role to army and will work towards fulfilling all tasked requirements with Esprit de Corps!

Vugraph list:
   #1   Title "THE MICROFIX DTED DUBBING FACILITY ..."
   #2   Photo of the MICROFIX DTED Dubbing Workstation
   #3   Photo of 9-track magnetic tape next to videocassette cartridge
   #4   Map showing DTED processed for Europe to date
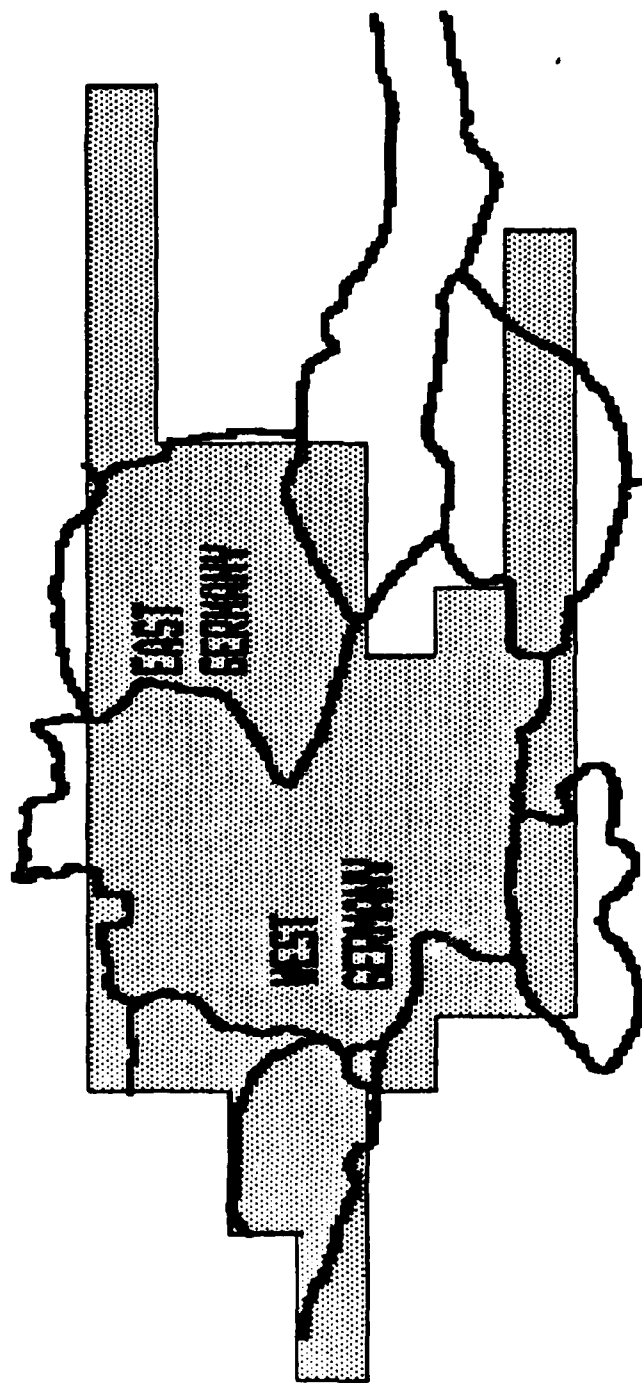   #5   Map showing DTED processed for Korea to date

TERRAIN ANALYSIS CENTER

THE MICROFIX DTED DATA DUBBING FACILITY

AT THE U.S. ARMY ENGINEER TOPOGRAPHIC LABORATORIES (ETL)

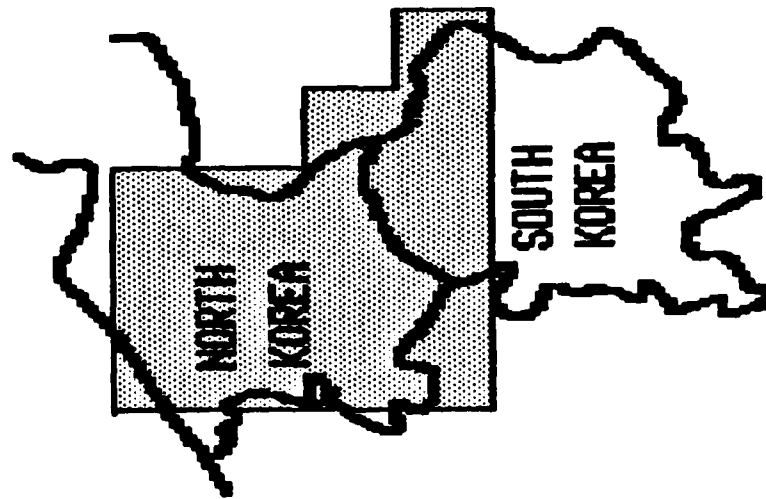#### OPERATED BY

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EAST GERMANY

WEST GERMANY
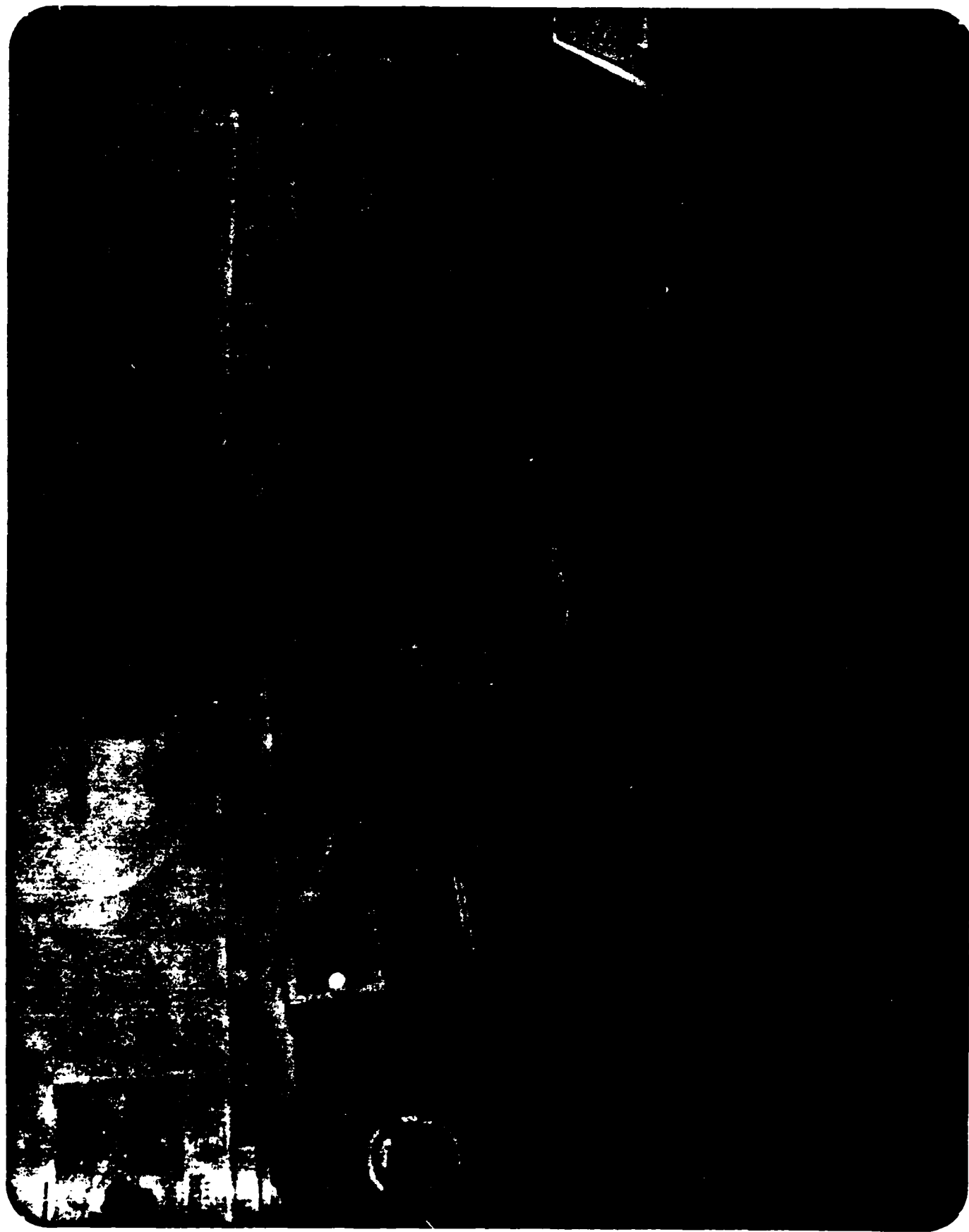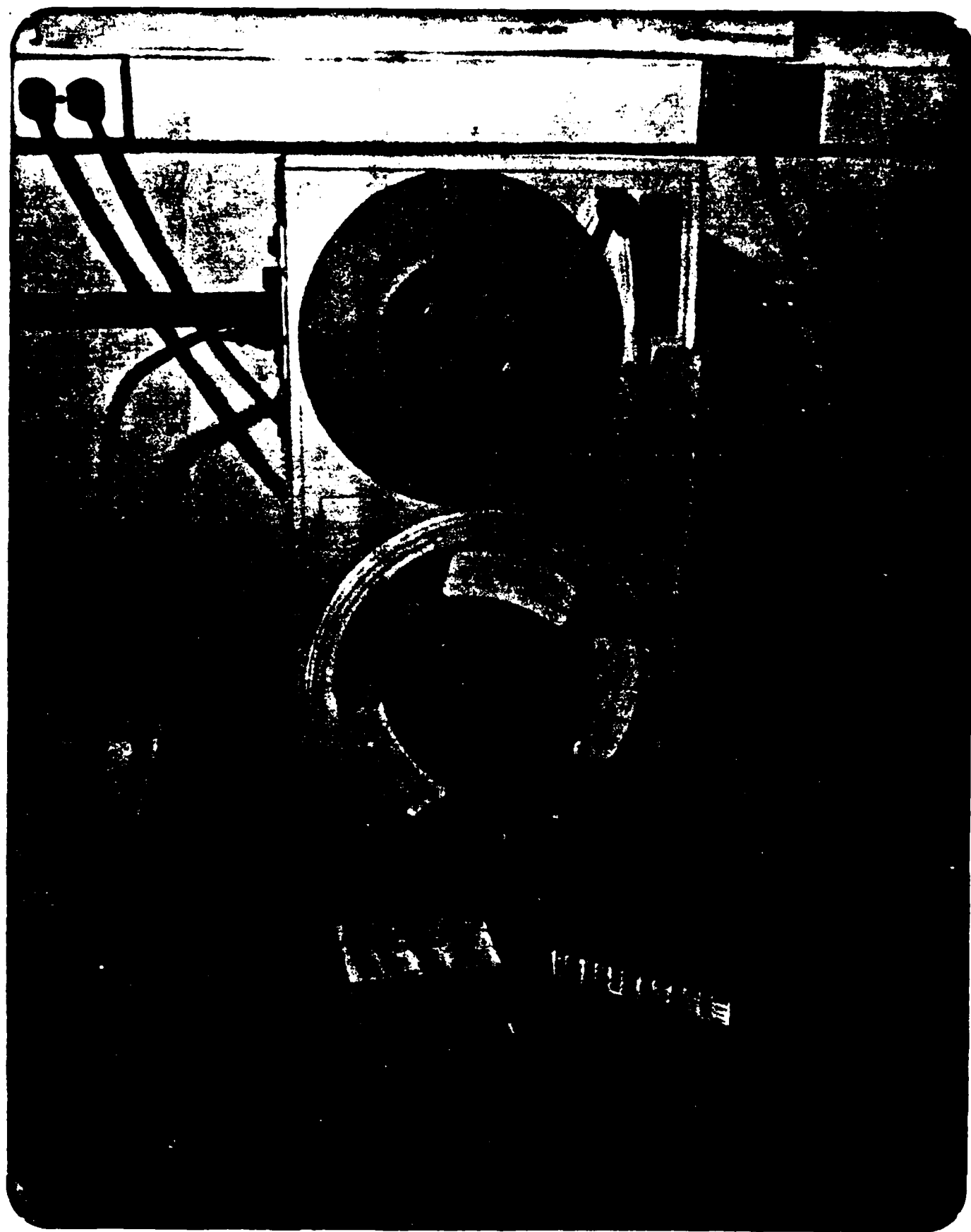
VUGRAPH #4

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NORTH
KOREA

SOUTH
KOREA

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